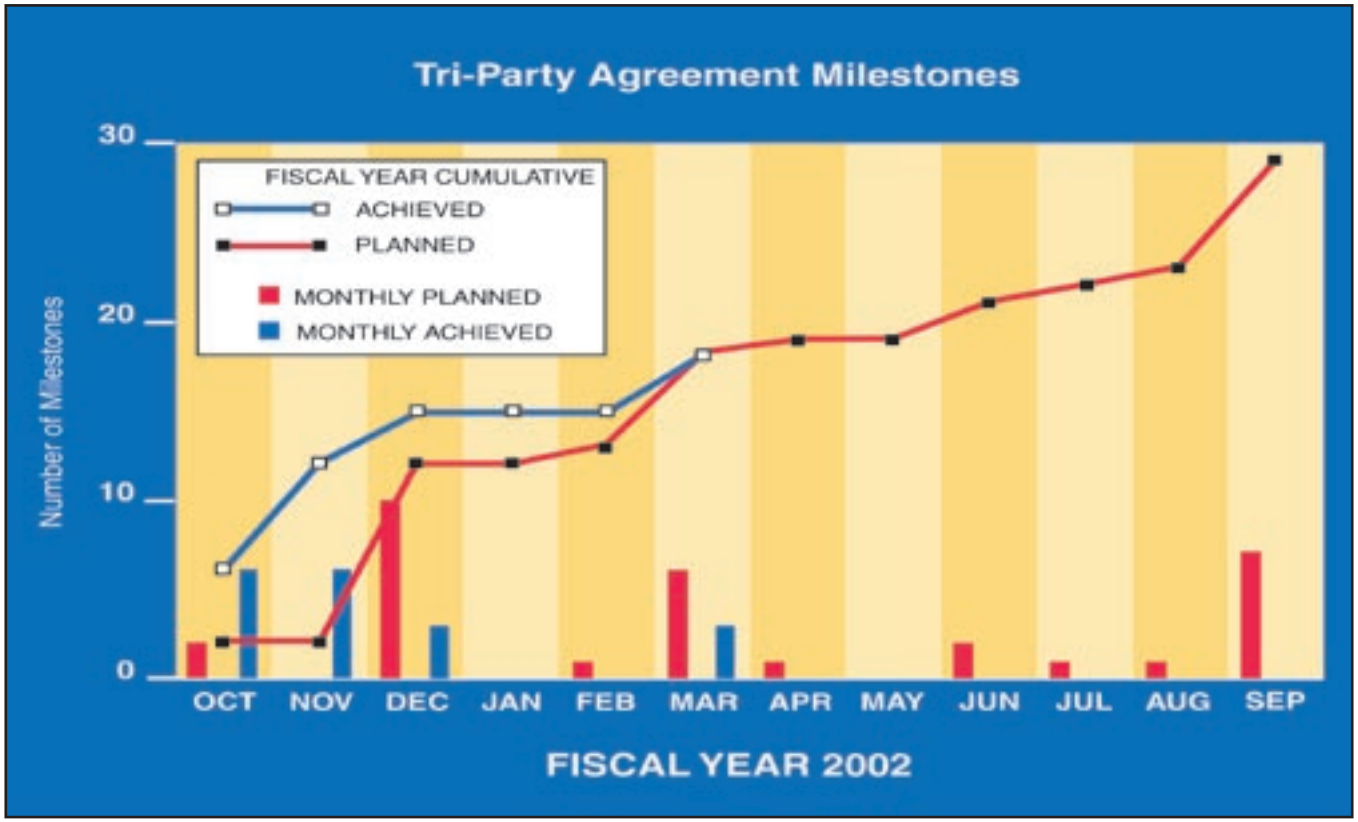

Cleanup Progress Report
January – March 2002
Prepared by
Fluor Hanford
DOE Richland Operations Office
RL
River • Plateau • Future

Contents

The Pacific Northwest National Laboratory, which is operated for the Department of Energy by the Battelle Memorial Institute, and Bechtel Hanford, the Department of Energy's Environmental Restoration Contractor, submitted material for this report.

2nd Quarter Fiscal Year 2002 Highlights

- Shipped 14 multi-canister overpacks out of K-West Basin and away from the Columbia River. These 14 loads of spent nuclear fuel were dried and transported to central Hanford and placed in dry, interim storage.
- Achieved 4.2 million hours of work without a day lost to injury within the Spent Nuclear Fuel Project, a Hanford Site record.
- Completed the 327 Building I Cell cleanout.
- Received the Voluntary Protection Program Star, the Department of Energy's highest safety recognition, for the River Corridor Project.
- Achieved 88 percent of plutonium solution inventory stabilization.
- Transferred a 4,000-ton aluminum extrusion press to Kaiser Aluminum in Richland, Wash., and transferred a crane to Waste Control Specialists for use at its Texas burial facility.
- Trained the 100,000th Hanford student at the Volpentest HAMMER Training and Education Center.
- Submitted the final integrated Fluor Hanford and Bechtel Hanford Central Plateau Transition Plan to the Department of Energy. The Department of Energy initiated the transition plan, which defines the scope, schedule and budget estimates to implement the transition of certain work scope from Bechtel Hanford to Fluor Hanford by July 1.
- Completed removal of all process vessels and piping at the 233-S Plutonium Concentration Facility in March, more than a year ahead of schedule.

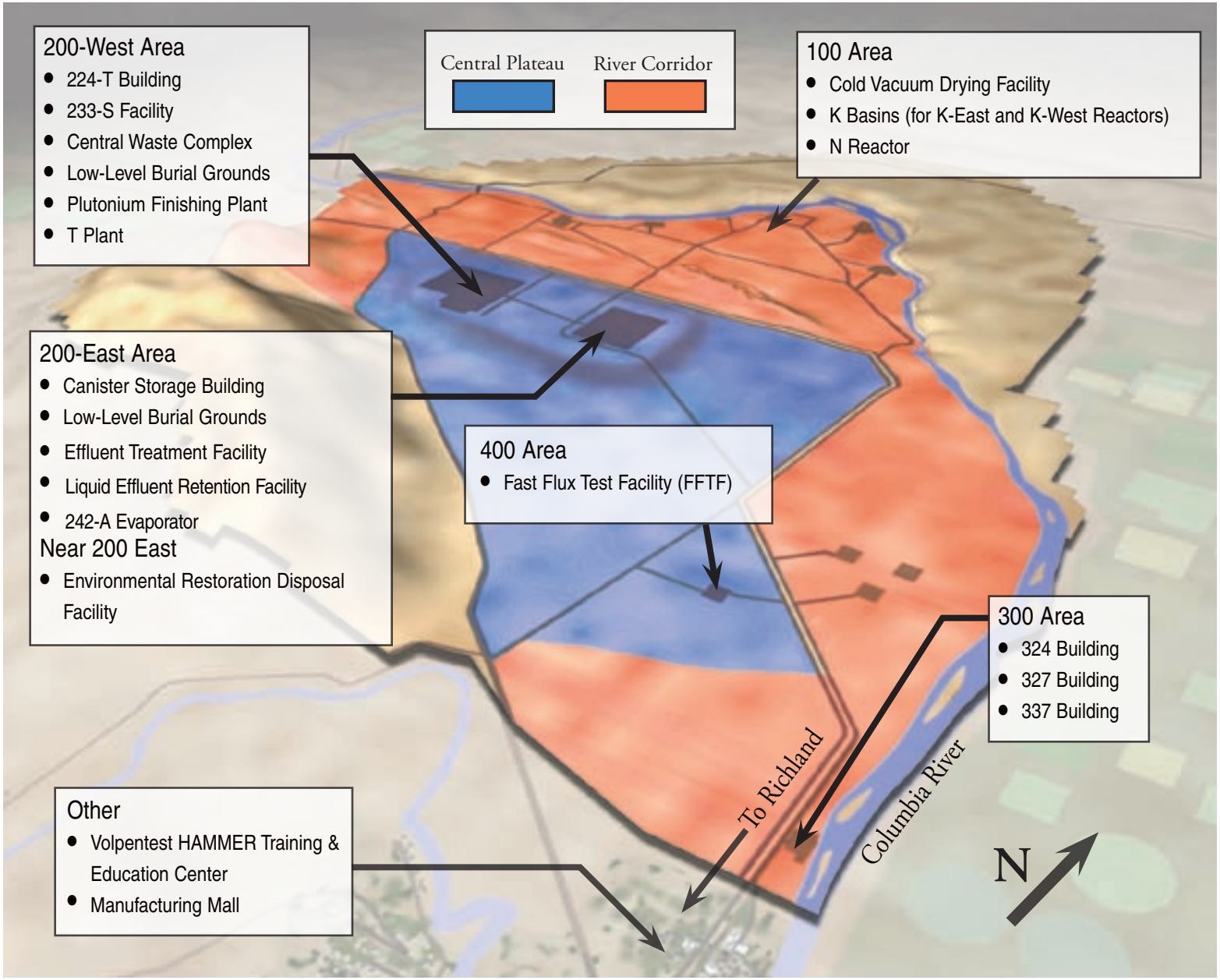


Three Fluor Hanford Tri-Party Agreement milestones were due and completed this quarter. Another milestone was completed five months early. Component fabrication delays caused a two-month delay for one milestone, M-034-29, "Complete K-East Basin and K-West Basin Facility Modifications for Alternate Fuel Transfer Strategy Cask Transportation System."

Bechtel Hanford completed 11 Tri-Party Agreement milestones through the second quarter of FY 2002. Of the three milestones scheduled for completion in the second quarter, two were completed in the previous quarter and one is proposed for deletion. Tri-Party Agreement Milestone, M-093-12, was due in February, but because of the 100 Area work scope renegotiation, this milestone will be deleted when the River Corridor Project change requests are signed.

Hanford Site Map

Cleanup is in progress at the facilities located on this map.



Restore the River Corridor

The River Corridor

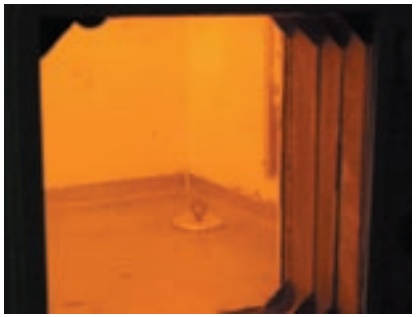
The river corridor encompasses approximately 210 square miles adjacent to the Columbia River. It is divided into three areas: the 100 Area, comprising nine shut-down plutonium production reactors and support facilities; the 300 Area, comprising manufacturing and research facilities; and the 600 Area, comprising the mostly vacant land between the 100 and 300 Areas.

Nuclear Energy Legacies

Cleanup of legacy sodium systems in the 337 Building continued with the sectioning of small-diameter piping into removable lengths. Randy Brown is shown cutting some of this piping adjacent to a previously drained sodium storage tank (below). An internal inspection performed in the Composite Reactor Component Test Activity vessel revealed that it contains approximately 300 gallons of residual sodium, much less than the 1,500 to 2,000 gallons it was previously thought to contain. In the nuclear energy legacy facilities about 1,000 to 1,500 gallons of sodium remain to be disposed. This amount is considerably less than the 3,000 gallons previously estimated for disposal. Work at the 337 Building is advancing the cleanup of the 300 Area.

The project mission is to safely deactivate contaminated buildings and ship radioactive and hazardous waste out of the 300 Area to compliant storage away from the city of Richland and the Columbia River.

River Corridor Project



At the 324 Building, project personnel prepared to remove the spent nuclear fuel stored in B Cell by initiating the Spent Nuclear Fuel Integrated System Testing and conducting the Spent Nuclear Fuel Inner Canister Shield Plug Welding Demonstration.

Project personnel completed the 327 Building I Cell cleanout and removed the criticality alarm system. Two views (right) through the thick leaded glass of I Cell show the cell before and after the cleanup. I Cell was the third of 10 cells to be cleaned out at the 327 Building.

Project staff shipped three flat railcars to the low-level waste burial grounds for disposal.

Twelve lead-lined drums containing lead recycled from one of Hanford's tall well railcars will be used to remove Pacific Northwest National Laboratory (PNNL) legacy waste buckets from the 327 Building.

Project staff members submitted the final integrated Fluor Hanford and Bechtel Hanford Central Plateau Transition Plan to the Department of Energy (DOE). The Department of Energy initiated the transition plan, which defines the scope, schedule and budget estimates to implement the transition of certain work scope from Bechtel Hanford to Fluor Hanford by July 1.

The River Corridor Project became the sixth Hanford organization to receive DOE's highest safety recognition—the Voluntary Protection Program Star (left). The constellation of VPP Stars at Hanford includes Day and Zimmermann Protection Technology Hanford, Fluor Federal Services, Pacific Northwest National Laboratory, the former DynCorp Tri-Cities Services (now part of the Hanford Site Operations) and the Fast Flux Test Facility.

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Spent Nuclear Fuel Project

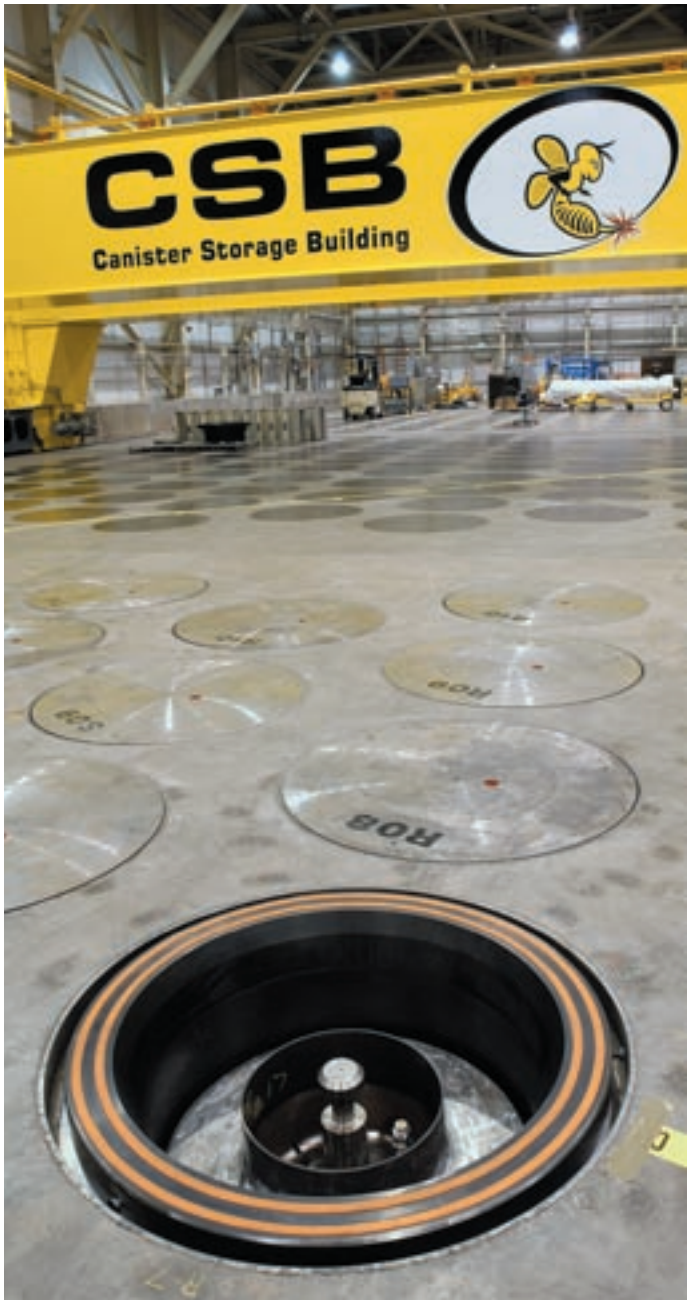
The Spent Nuclear Fuel Project reduces the risk to the Columbia River by safely relocating fuel, sludge, debris and water residing in the K Basins to interim storage in the center of the Hanford Site. It will also deactivate the 100K facilities.

Most of the spent nuclear fuel stored in the K Basins, located in the 100 Area, was irradiated in the now shut-down N Reactor. Before the Spent Nuclear Fuel Project began moving fuel out of the K Basins in December 2000, 105,000 N Reactor fuel assemblies resided there. Before December 2000, the amount of radioactivity, measured in curies, was approximately 55 million curies.

Spent fuel is loaded into baskets and then into multi-canister overpacks, also known as MCOs. The fuel is dried in the Cold Vacuum Drying Facility and placed in dry interim storage in steel tubes beneath the Canister Storage Building in Hanford's central plateau.

Fourteen MCOs were shipped out of K-West Basin. Since December 2000, 53 MCOs and approximately 8 million curies of radioactivity have been removed from the Columbia River shoreline. Round-the-clock, seven-day-a-week operation began at K-West Basin.

Spent Nuclear Fuel Project personnel worked 4.2 million hours without a day lost to injury, a Hanford Site record.



Spent Nuclear Fuel Project

Cold Vacuum Drying Facility workers further reduced the average process time for an MCO to approximately 65 hours — 25 hours fewer than the original project goal of 90 hours.

Spent-fuel-basket fabrication is ahead of schedule. With the fabrication of 160 baskets this quarter, more than half of the baskets required for fuel removal are complete.

Project personnel began operating canister-cleaning equipment (right) at K-West Basin.

Environmental Restoration Along the River

The Environmental Restoration Contractor team, led by Bechtel Hanford, Inc., let a contract to remediate the 618-4 and -5 Burial Grounds. The site is located about 1.5 miles north of the city of Richland and about 400 yards from the Columbia River. Work at the site will resume in April 2002 after being suspended four years ago. Work at the site was halted after barrels containing depleted uranium shavings and uranium oxide powder were unearthed unexpectedly. Nearly 350 drums were unearthed and more than 1,200 drums could still be buried. The above-ground drums are monitored bi-weekly as shown below. In February, workers began readying the site for excavation work to begin.

Environmental Restoration Along the River

Demolition of D Reactor (below) continued as workers began constructing the 75-year roof on DR Reactor, part of the Interim Safe Storage project.

Workers using a remotely controlled excavator at F Reactor discovered the 11th spent fuel element in the fuel storage basin. Environmental Restoration Contractor team employees, led by Bechtel Hanford, Inc., have worked on the Interim Safe Storage project without recording a single lost-time injury in the project's nearly eight-year life. They have worked almost six years without a contamination event.

What's Next in Restoring the River Corridor?

Continue to cut and package small-diameter sodium piping in the 337 Building for off-site disposal. Prepare requests for proposal to clean residuals from the Composite Reactor Component Test Activity vessel and the 3718M sodium storage tank.

Complete Readiness Assessment to move spent nuclear fuel out of the 324 Building.

Complete the remaining 26.5 percent of the 324 and 327 Buildings deactivation work.

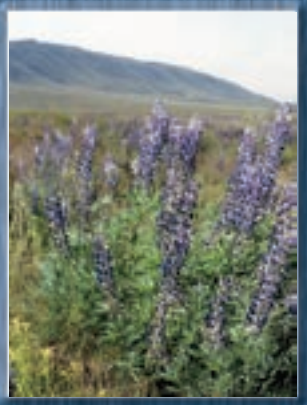
Ship two more of four tall well railcars to Memphis, Tenn., for recycling.

Remove, dry and place in storage approximately 40 more MCOs of spent nuclear fuel, which will represent approximately 6 million curies of radioactivity removed from the Columbia River shoreline.

Complete construction and performance acceptance testing for K-East Fuel Transfer System.

Begin accepting and storing Shippingport spent nuclear fuel, now stored in T Plant, at the Canister Storage Building.

Begin cleanup of burial grounds 618-4 and -5 north of the 300 Area.



The Plateau

The plateau lies near the center of the Hanford Site and includes the 200 Areas and the 400 Area and is the location of Hanford's longer-term missions of waste treatment, storage and disposal operations.

Transition the Plateau

Fast Flux Test Facility

The Department of Energy directed Fluor Hanford to immediately begin deactivation of the Fast Flux Test Facility (FFTF) and to no longer maintain the restart potential of the FFTF. As a result, actions have been taken to shut down and secure unneeded systems and components. FFTF staff continued repairs and upgrades to fuel-handling systems that will be needed to remove stored fuel assemblies. FFTF personnel are testing the Closed Loop Ex-vessel Machine control system. Procurement and fabrication activities are in progress on the Solid Waste Cask repair and upgrade components.

A review of the plans for FFTF's deactivation and decommissioning has revealed opportunities to close the facility two decades earlier and at significantly lower cost. The review team recommended that Fluor Hanford identify a disposition path for slightly irradiated fuels and accelerate the 400 Area end-state determination to reduce programmatic and technical risk.

Electrician Doyle Dunlap (standing, above) and boilermaker Domingo Ramirez are installing the final end bell closure over the heater for sodium removal system tank T-101. Tank T-101 provides water to the sodium removal chamber for cleaning sodium residuals from the surfaces of fuel assemblies before they are packaged for storage.

Nuclear Material Stabilization

The purpose of the Nuclear Material Stabilization Project is to stabilize and package all remaining plutonium inventory, ship that inventory off-site, and ultimately demolish the Z-Plant, also known as the Plutonium Finishing Plant, to a slab on grade.

The progress of stabilization of plutonium solutions at the Plutonium Finishing Plant (PFP) continued to be good during the past quarter, resulting from the steady operation of the oxalic acid precipitation process and the successful completion of direct discard. PFP innovatively stabilized 1,000 liters of low-concentration plutonium solutions by simple absorption on a mineral sorbent and then shipped the mineral sorbents to the Hanford Central Waste Complex. This approach to solutions stabilization is called direct discard. In the second quarter, PFP has stabilized 88 percent by weight of the plutonium solution inventory and is on schedule to complete the stabilization of the plutonium solution inventory during the fourth quarter.

In the adjoining photos, PFP personnel are shown stabilizing the plutonium solution inventory using the direct discard method.

Nuclear Material Stabilization

Based on a testing program jointly conducted by Fluor Hanford and the Pacific Northwest National Laboratory, the Plutonium Finishing Plant was authorized to process the critical mass laboratory solutions in a series of gloveboxes using existing moisture measurement procedures. The testing program also resulted in changes in processing conditions that reduce the volume of the filter cake product. The reduced product volume resulted in a two-month schedule gain in solutions processing and a reduction in the cost of storing the product.

PFP completed all construction work for Project W-460 on a new 2736-ZB entry control facility (below), which adds a new layer of security to the vault and the stabilization and packaging equipment glovebox line. With the completion of the entry control facility, the construction project is proceeding toward administrative closure more than a year ahead of schedule and at a cost savings of $1 million.

Waste Management

The Hanford Waste Management Program supports the restoration of the Columbia River corridor and transition of the Hanford Site central plateau to a long-term operation by managing programmatic Hanford activities related to radioactive solid waste, liquid waste, and cesium and strontium capsules. Activities include retrieval, storage, treatment, processing and disposal.

Preparations continue for back-to-back 242-A Evaporator campaigns later this summer in support of the River Protection Project. Waste Management Project personnel completed a cold run of the facility to verify system operability and to maintain operating staff competency and certification. Liquid effluent treatment campaigns continued, supporting generator needs (including groundwater cleanup) and making storage space available to support the planned 242-A Evaporator campaigns.

Spent Nuclear Fuel Project Support

Project personnel completed the cleanout of a second T Plant cell to prepare for spent nuclear fuel sludge storage. Following cell cleanout, liner systems will be placed in the cells to allow compliant storage of spent nuclear fuel sludge containers. Receipt and staging of these cell liner systems is under way. Project personnel have staged several of the systems in the canyon. Readiness preparations for the movement of the Shippingport Fuel out of the canyon, in preparation for SNF sludge receipt, also continued.

Nuclear Material Stabilization Support

The Waste Management team accepts waste shipments from the Plutonium Finishing Plant into the Central Waste Complex for interim storage pending future processing or off-site shipment. This quarter, shipments of Hanford ash in pipe-overpack containers were completed. All of the off-site and Hanford ash has been shipped to the Central Waste Complex. The first 15 pipe-overpack containers of sand, slag and crucible transuranic waste were received from PFP.

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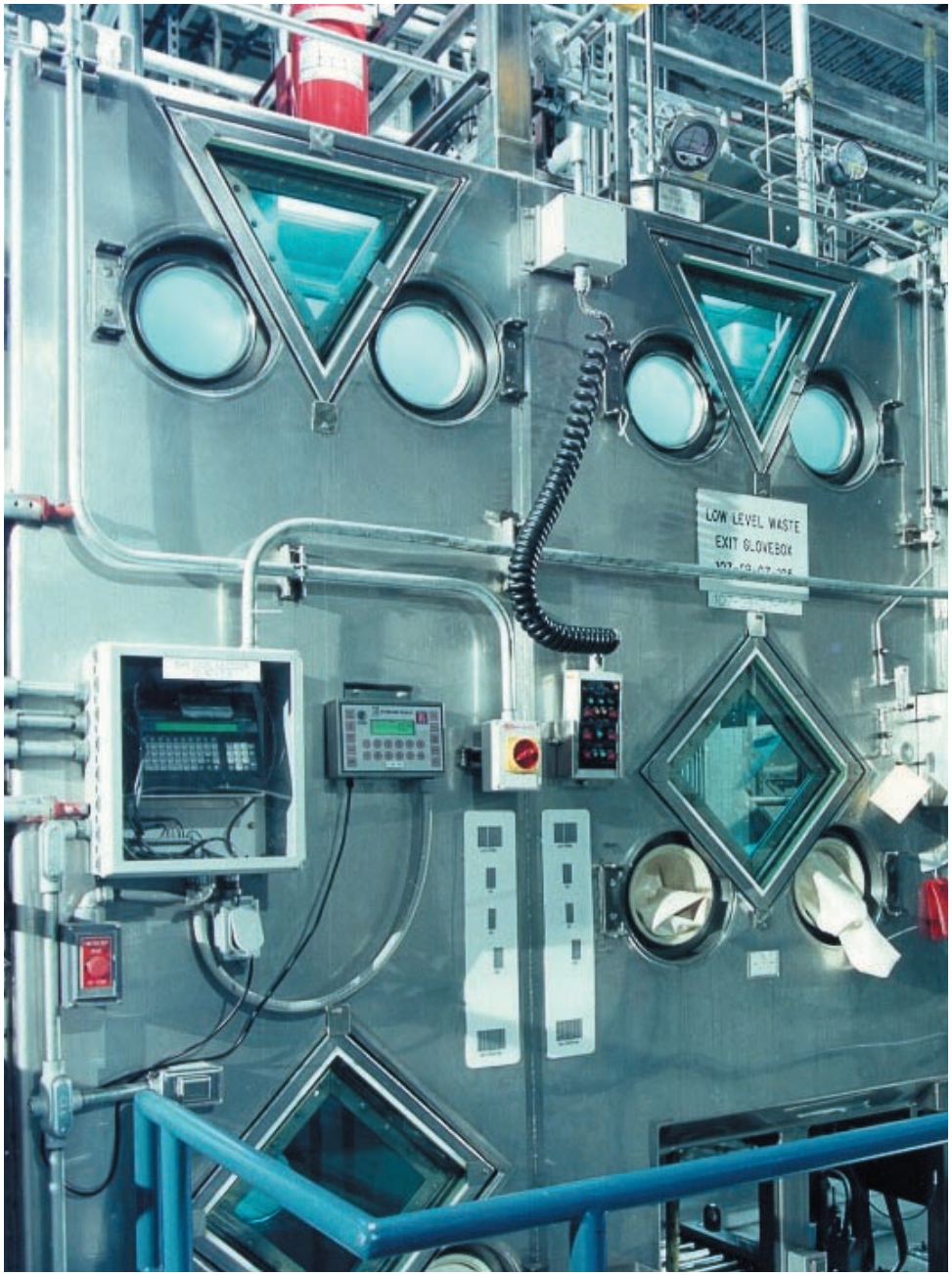

Transuranic Waste Program

The glovebox line for low-level waste is being modified at the Waste Receiving and Processing facility. This modification, partially funded through a DOE Office of Science and Technology program, will provide increased capability and reliability in transuranic waste processing activities at WRAP. This improvement will directly support acceleration of transuranic waste certification and shipment activities in FY 2003.

Environmental Restoration on the Plateau

Workers at the 233-S Plutonium Concentration Facility completed removal of all process vessels and piping in March, more than a year ahead of schedule. The 233-S facility is the first plutonium production facility to be decontaminated and decommissioned at Hanford. The plutonium concentration vessels were connected by about 4,500 feet of piping and electrical conduit. In the project's 4.5-year life, workers, such as the ones shown on this page, have made 11,500 entries into highly contaminated areas and airborne radioactivity areas with only six minor personnel contamination events, contributing to the outstanding safety record of the Environmental Restoration Contractor team, led by Bechtel Hanford, Inc.

What's Next in Transitioning the Plateau?

Update the detailed plans and schedule for FFTF deactivation. Initiate preparations for secondary sodium drain.

Complete readiness for Shippingport nuclear fuel movement from storage at T Plant.

Begin stabilization of plutonium-bearing polystyrene items called "polycubes" in the thermal furnaces at PFP.

Continue packaging sand, slag and crucible, which are residues that have low plutonium content, in pipe-overpack waste containers that are destined for shipment to the Waste Isolation Plant in New Mexico.

Initiate new activities using the Energy Secretary's accelerated cleanup funds to speed up the final demolition of PFP by seven years.

Complete construction of a waste staging area at the Environmental Restoration Disposal Facility.

Transition the Groundwater/Vadose Zone Integration Project, 233-S Plutonium Concentration Facility Decommissioning Project, Hanford Environmental Information Systems and other Central Plateau-related work scope to Fluor Hanford.

Prepare for the Future

Asset Transition

Asset Transition is a group within Fluor Hanford that is responsible for maximizing the transfer of usable, but excess government assets to the private sector.

Fluor Hanford completed removing and relocating a 4,000-ton extrusion press (right) from the 300 Area to the Port of Benton Manufacturing Mall, a former Department of Energy procurement and warehousing facility (north of Richland). The press was sold to Kaiser Aluminum and will be used in Kaiser's Richland Specialty Extrusions plant, which expects to create 50 new private-sector jobs. Kaiser paid for the move, saving DOE $1 million dollars in removal costs.

The River Corridor Project worked with Fluor Federal Services, the Hanford Site Organization and asset transition organizations within Fluor Hanford and DOE's Richland Operations Office to locate a new user for a radioactively contaminated crane. Waste Control Specialists accepted the contaminated crane (left) for use at its Texas burial facility, licensed by the Nuclear Regulatory Commission. The transfer of this asset saved the River Corridor Project $300,000 in disposal costs.

Asset Transition

A Remstar vertical file system, an automated storage for hand tools and small parts (below left), was removed, transferred to the Tri-Cities Asset Reinvestment Company, also known as TARC, and sold to the Remstar dealer in Spokane, Wash. The removal of the large system provided revenue to TARC and space needed (below right) by another firm located in the Port of Benton Manufacturing Mall.

Lockheed Martin Information Technology, a provider of imaging and multimedia services to the Hanford Site, moved to an all-digital format, and no longer needed its photo lab equipment. Asset Transition completed the transfer of the Lockheed Martin Information Technology photo lab to TARC. Included in the transfer were copy cameras and other equipment involved with the processing of film and photographs. The equipment transfer will assist several local businesses to expand their services in film processing and imaging and provide revenue to TARC.

HAMMER

The Volpentest Hazardous Materials Management and Emergency Response (HAMMER) Training and Education Center is a one-of-a-kind worker safety training facility involving the hands-on use of realistic props and settings to save lives, reduce injuries, protect the environment and increase worker productivity. HAMMER is made up of an 80-acre main campus and a 10,000-acre law enforcement campus. The center is dedicated to community leader and training advocate, Sam Volpentest.

In January 2002, HAMMER reached a major milestone, training over 100,000 Hanford students since first opening its doors in September 1997.

Thirty-six new radiological control technicians are now working at Hanford, thanks to recruiting and training efforts by HAMMER and Hanford Training. Last spring, interested individuals responded to an advertisement in the local newspaper, participated in interviews at a job fair, then attended a four-month, tuition-free training program on their own time. A 16-week site academics and on-the-job training program completed the training.

HAMMER

HAMMER received two new burn props in January: the vehicle burn prop, which creates conditions encountered during control and suppression of automobile fires and the dumpster burn prop, which is used to train the safe approach and extinguishing of typical commercial dumpster fire.

What's Next for the Future?

Transfer assets originally purchased for use in the Groundwater/Vadose Zone Monitoring Project including approximately 10 tons of carbon steel drill rods and casings, stainless steel casings, PVC pipe material, and two trailers, from 810 Drill Yard to TARC.

Cleanup and removal of drilling materials from N-Reactor laydown yard.

Work to increase the number of hands-on Hanford training classes, including cost-effective site mock-ups. A mock-up is an activity that uses HAMMER props or resources to perform a dress rehearsal of a specific task or work scope.

Work with tribal governments to protect natural and cultural resources with the intention of helping DOE meet its federal trust responsibilities and to protect the rights and interests of tribes at the Hanford Site. Armand Minthorn (right) of the Confederated Tribes of the Umatilla Indian Reservation meets with Jessie Roberson, DOE Assistant Secretary of Environmental Management.

Support & Services

Hanford Site Operations provides services in the areas of analytical services, information resource management, utilities, energy and water conservation, telecommunications, fire systems and emergency response, safeguards and security, roads and grounds, crane and rigging, fabrication and calibration services, fleet maintenance, sanitary waste disposal, asset disposition, training and property management to other Hanford contractors.

Site Fabrication Services completed modifications on the CH2M HILL Hanford Group portable exhauster POR-007 that included the addition of a gaseous-emission monitoring system. This work supported a critical CHG project milestone. This exhauster provides a backup for the primary ventilation system in SY Tank Farm.

Support & Services

The Washington State Legislature recognized Hanford Patrol Captain Steven Voigt for winning the state's top title in pistol marksmanship 20 years in a row. Voigt is the range master and training officer at the Hanford Patrol Training Academy and currently holds five national and two Washington State marksmanship records.

Fluor Hanford implemented Phase I of the city manager concept, which transfers funds from the Hanford Site contractors to directly funded base services. This implementation culminates a yearlong effort and is the first step toward achieving DOE Richland Operations Office's goals of streamlining Hanford Site services and lowering costs. The city-manager concept equitably aligns the costs of services with the services rendered.

Support & Services

The Hanford Fire Department and biological control organizations safely disposed of tumbleweeds by conducting approved controlled burns in and around the 200 West Areas. Tumbleweeds with the potential for radiation contamination were picked up in compactor trucks and disposed of in a designated trench. Disposition of the tumbleweeds eliminates safety concerns, fire hazards and contamination spread.

What's Next for Support & Services?

DOE's Richland Operations Office granted approval for Hanford Site Operations to proceed with the 100/200 Area Water Upgrade Project to replace old, inefficient pumps.

Environment, Safety & Health

Safety Improvement Plan

To help maintain the high standard of doing work safely and to underscore the concept that personal safety is a 24-hour-a-day responsibility, Fluor Hanford employees developed and are implementing a five-point Safety Improvement Plan. The initiative includes meetings, safety and stress training and a focused communication strategy supporting continuous improvement in the Fluor Hanford safety program centered around the Integrated Safety Management System and the Voluntary Protection Program.

What's Next?

Hold the 2002 Health and Safety Exposition to exhibit equipment and supplies and to share information and success stories that promote the health and safety of workers both at home and at work. At the 2002 Expo, the DOE's Assistant Secretary for Environmental Health, Beverly Cook, will commemorate the earning of six DOE Voluntary Protection Program Stars by employees of the Hanford Site and the Pacific Northwest National Laboratory.

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RL-F98-009 05/02